

CLAIMS

1. An electrolytic processing apparatus comprising:
 - a feed electrode configured to feed an electric current to a conductive
 - 5 material formed on a workpiece;
 - a contact member configured to be brought into contact with or close to the workpiece;
 - a process electrode operable to perform an electrolytic process on the conductive material formed on the workpiece;
 - 10 an electrolytic processing liquid source operable to supply an electrolytic processing liquid between the workpiece and said contact member;
 - a regeneration liquid chamber configured to immerse said process electrode in a regeneration liquid;
 - a regeneration liquid supply source operable to supply the regeneration
 - 15 liquid to said regeneration liquid chamber;
 - a regeneration electrode spaced from said process electrode;
 - a power supply operable to apply a voltage between said feed electrode, said process electrode, and said regeneration electrode; and
 - a controller operable to control the voltage applied between said feed
 - 20 electrode, said process electrode, and said regeneration electrode so that said feed electrode has a potential higher than said process electrode and the same polarity as said process electrode, and that said process electrode has a potential higher than said regeneration electrode.
- 25 2. The electrolytic processing apparatus as recited in claim 1, further comprising an insulation member disposed between said contact member and said process electrode, said insulation member having liquid permeability.
- 30 3. The electrolytic processing apparatus as recited in claim 2, further comprising a diaphragm disposed between said contact member and said insulation member so as to separate the electrolytic processing liquid and said regeneration liquid.

4. The electrolytic processing apparatus as recited in claim 3, wherein said diaphragm comprises an ion exchange film.

5. The electrolytic processing apparatus as recited in any one of claims 1
5 through 4, wherein said contact member comprises an ion exchanger.

6. The electrolytic processing apparatus as recited in any one of claims 1
through 5, wherein said process electrode has liquid permeability.

10 7. The electrolytic processing apparatus as recited in any one of claims 1
through 6, wherein said controller is operable to control potentials of said feed
electrode, said process electrode, and said regeneration electrode, or currents
flowing through said feed electrode, said process electrode, and said regeneration
electrode.

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8. The electrolytic processing apparatus as recited in claim 7, wherein said
controller is operable to control the current flowing through said process electrode
so as to be equal to 1 to 30 % of the current flowing through said feed electrode or
said regeneration electrode.

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